

THE LUCANID GENUS DIPHYLLOSTOMA
(Coleoptera)

BY E. GORTON LINSLEY

Oakland, California

The genus *Diphyllostoma* is one of the most interesting as well as one of the most remarkable of the genera of the Lucanidæ. Two species have been known for some years by the male only. They have both been very rare in collections and practically nothing has been known of their biology. The recent capture of a considerable series of males of these species and the discovery of the flightless female, in addition to certain field observations on the group, has resulted in the following notes and remarks on the members of this genus.

Diphyllostoma Fall¹ (|| *Phyllostoma* Fall²) contains two small, slender species, with a small, transverse head, with two cephalic ridges which converge v-like at the base, large, subglobular, moderately finely granulated eyes, small mandibles, and straight antennæ. The adult insects are diurnal, flying in the early morning and late afternoon or evening. They are usually found in grassy areas and probably feed in the larval stage upon the living or decomposing roots of various wild grains or grasses. The female is wingless and exhibits many differences from the male, resembling in this respect the females of certain Scarabæidæ and Cebriionidæ³ which are similar in habits.

The following table, based upon male characters, will separate the two known species:

Mandibles strongly emarginate at tip; suborbital plates prominent; unicolorous, dark brown. 6-8 mm. Tulare County California	<i>fmbrata</i> (Fall)
Mandibles evenly rounded; suborbital plate inconspicuous; bicolored, prothorax piceous, elytra brownish. 5-9 mm. Middle Sierra Nevada Mountains, California	<i>nigricollis</i> Fall

¹ Fall, H. C. Can. Ent. XXXIII, p. 324.

² Fall, H. C. Can. Ent. XXXIII, p. 290.

³ For sexual differences in certain Cebriionidæ, see *Biologia Centr. Americana*, 1896, Coleoptera, III, Pt. 1, Plate 25, Figs. 19, 20.

DIPHYLLOSTOMA FIMBRIATA (Fall) (Page 119, fig. 3)

This species was described some thirty years ago from material taken by Mr. Ralph Hopping near Kaweah, Calif. The type specimens were collected on grain and wild grasses on a small sandy hill and were nearly all taken at dusk. Mr. E. R. Leach recently took a fine series under similar conditions at Hot Springs, Tulare County. His observations suggest that the beetles were merely crawling up the stems to take flight and were making no attempt to feed on these grasses. All of Mr. Leach's specimens were taken in a very limited area, one individual flying before 6 a. m., the remainder in late afternoon. This species has also been found in Sequoia National Park, where it was taken in numbers from the Power Company's flumes by Dr. E. C. Van Dyke and his students.⁴ *D. fimbriata* is found from the middle of May to late July, between 1000 and 3500 feet altitude. Only the male is known.

DIPHYLLOSTOMA NIGRICOLLIS Fall (Page 119, figs. 1, 2, 2a)

The most important character separating this species from the preceding is the non-emarginate mandibles. In the female, which probably more nearly represents the common type from which the species were derived, the mandibles show a slight emargination. The sub-orbital plate is much more prominent in *D. fimbriata* than in *D. nigricollis*, but most of the other characters, such as the comparative length of the tarsi, the puncturation, and the elytral sculpturing lose their value in a series. The color differences are not always apparent, especially in fresh material, and at such times both species may be a more or less uniform dark brown. Usually, however, the elytra are distinctly lighter in *D. nigricollis*.

For many years this species was known only by the type material, but in the summer of 1930, Mr. Howard Hinton⁵ took a series of males from a flume near Riverton, Calif. While collecting in the same region in early July, 1931, the writer and Mr. E. C. Zimmerman captured in addition a

⁴ See note by E. C. Van Dyke, Pan-Pac. Ent. VII, 1930, p. 95.

⁵ Hinton, H. Observations on Two California Beetles, Pan-Pac. Ent. VII, 1930, page 95.

long series of males and two females. Later in the same month, additional females were taken by Mr. Hinton. As the female proved to be quite different from the male, the following table was prepared to bring out a few of these peculiarities:

Male	Female
Fully winged.	Wingless, or with only slight wing rudiments.
Elytra parallel-sided, longer than abdomen.	Elytra broadly oval, shorter than abdomen.
Eyes large.	Eyes very small.
Tarsi much longer than posterior tibiæ.	Tarsi shorter than posterior tibiæ.
Anterior tibia with large apical tooth on inner side.	Apical tooth on anterior tibia replaced by a small slender spine.
Mandibles evenly rounded.	Mandibles slightly emarginate.

Like the preceding species, *D. nigricollis* apparently flies in the morning and late afternoon, although occasional specimens have been taken throughout the day. Nothing is known of the biology of this species, but it probably lives in the ground. The type series was taken in Fresno County, flying "in the pines" at 6600 feet altitude. The Riverton specimens were all taken at about 3000 feet, from May to July.

AMBLYCHEILA IN CALIFORNIA

A fine pair of *Amblycheila picolomini* Rche. has recently been added to the collection of the California Academy of Sciences by Mr. Joseph R. Slevin, Curator of Herpetology in the Academy, who collected them near Skidoo in the Panamint Mountains in eastern California, at an elevation of 5,500 feet. These specimens fit Reiche's description very well and are without doubt that species. The original description gave the locality as San Francisco but not until now has an *Amblycheila* been reported from this state. The species recorded above agrees also with River's illustration¹ of what he took to be *A. picolomini* from Peach Springs, Arizona, and it seems as though this name should be restored to specific standing.—J. O. Martin.

¹ Zoe. Vol. IV, pp. 218-223, plates 18, 19, 1893.